

Amendments to the Claims

1. (previously presented) A balun, comprising:

- a first capacitor coupled to an input;
- a plurality of first coupled metal traces coupled to said first capacitor;
- a plurality of second coupled metal traces, said plurality of second coupled metal traces electromagnetically coupled to said plurality of first coupled metal traces;
- a ground coupled to said plurality of second coupled metal traces;
- a first output coupled to said plurality of second coupled metal traces;
- a second output coupled to said plurality of second coupled metal traces,
- a second capacitor coupled between said plurality of first coupled metal traces and ground, wherein said second capacitor electrically loads said plurality of first coupled metal traces so that each metal trace in said plurality of first coupled metal traces and said plurality of second coupled metal traces has a physical length less than one-quarter wavelength of an input signal received at said input;
- a third capacitor coupled to said first output; and
- a fourth capacitor coupled to said second output.

2. (currently amended) The balun of claim 1, wherein said plurality of first coupled metal traces and said plurality of second coupled metal traces are located on a surface layer of a printed circuit board.

3. (currently amended) The balun of claim 1, wherein said plurality of first coupled metal traces and said plurality of second coupled metal traces are located on the same layer of a printed circuit board.

4. (currently amended) The balun of claim 1, wherein said ground is placed beneath said plurality of first coupled metal traces and said plurality of second coupled metal traces.

5. (currently amended) The balun of claim 1, wherein said ground is placed at a periphery of said plurality of first coupled metal traces and said plurality of second coupled metal traces.

6. (original) The balun of claim 1, further comprising:

a fifth capacitor coupled between said first output and said second output.

7. (previously presented) The balun of claim 1, wherein said first output provides a signal having an equal amplitude and opposite phase to a signal provided from said second output in response to a signal received at input to said input.

8. (previously presented) The balun of claim 1, wherein said plurality of first coupled metal traces and said plurality of second coupled metal traces comprise respective are transmission lines.

9. (original) The balun of claim 8, wherein said plurality of first coupled transmission lines comprises one first coupled transmission line or two first coupled transmission lines.

10. (canceled)

11. (original) The balun of claim 8, wherein said transmission lines are coplanar waveguide transmission lines or microstrip transmission lines.

12. (original) The balun of claim 1, further comprising a first impedance matching network coupled to said input and a second impedance matching network coupled to said first output and said second output.

13. (original) The balun of claim 12, wherein said first impedance matching network comprises a fifth capacitor series coupled to an inductor.

14. (original) The balun of claim 12, wherein said second impedance matching network comprises:

two coupled metal traces, wherein at least one of a metal trace width, a metal trace spacing and a metal trace thickness is adjusted to provide a desired output impedance.

15. (original) The balun of claim 14, wherein said second impedance matching network comprises lumped element components.

16. (original) The balun of claim 12, wherein an input impedance of said balun is approximately 50 to 75 ohms.

17. (original) The balun of claim 12, wherein the output impedance of said balun is a desired value.

18. (original) The balun of claim 1, wherein a direct current power and low frequency digital control signal source is coupled to said input.

19. (original) The balun of claim 18, wherein a metal trace is coupled between said direct current power and low frequency digital control signal source and said input, wherein said metal trace does not effect said balun's electrical characteristics over a desired frequency range.

20. (original) The balun of claim 19, wherein said metal trace is a spiral inductor.

21. (original) The balun of claim 20, wherein said inductor is coupled to said input approximately 425 mils from said input.

22. (currently amended) A balun comprising:
a plurality of coupled metal traces;
an input, coupled to said corresponding ones of said plurality of coupled metal
traces;

an output, coupled to said corresponding ones of said plurality of coupled metal traces;

means for producing output signals having an equal amplitude and opposite phase responsive to an input signal received at said input, and

means for reducing a physical dimension of said metal traces.

23 - 35. (canceled)

36. (previously presented) A balun, comprising:

a plurality of first coupled metal traces that are electrically coupled to each other;

a plurality of second coupled metal traces that are electrically coupled to each other and to said plurality of first coupled metal traces, one end of said plurality of second coupled metal traces connected to ground;

a single-ended input coupled to said plurality of first coupled metal traces, and a differential output taken from said plurality of second coupled metal traces;

at least one of said plurality of first coupled metal traces capacitively coupled to ground, thereby electrically lengthening said plurality of first coupled metal traces and said plurality of second coupled metal traces.

37. (previously presented) The balun of claim 36, wherein said single-ended input is capacitively coupled to said plurality of first coupled metal traces.

38. (previously presented) The balun of claim 36, wherein said differential output is capacitively coupled to said plurality of second coupled metal traces.

39.(previously presented) The balun of claim 36, wherein a physical length of said plurality of first coupled metal traces and said plurality of second coupled metal traces is less than $\lambda/4$ of an input signal received by said input.